National development plan until the year 2006 Sector program "Environment"

April 1999

Content

Presentation

1. Program objective:

Preserving the quality of the environment in the ecologically clean areas of the country and improving the state of the environment in the polluted and damaged areas.

2. Expected results from the implementation of the program

Prevent and decrease the risk for human health, flora and fauna;
Improve the conditions for the development of key sectors of the economy – tourism and agriculture;
Build-up an effective ecological infrastructure to facilitate the increasing economic activity;
Improve the quality and quantity range of services for the population in the respective region;
Create new employment opportunities – temporary and permanent;
Facilitate the process of accession to the European Union ;
Stimulate local and regional development.

3. Scope

Territorial – the entire country;
Sectoral – five key sectors: water, air, waste, nature conservation, protection from landslide and abrasion;
Timing – 2000 – 2006.

4. Foundations

Accession Partnership;
National Programme for the Adoption of the Acquis (NPAA);

Government Programme 2001;
Environmental Strategy for ISPA;
National environmental sectoral strategies and programmes;
National sectoral strategies and programmes.

Sectoral programmes

Air quality

I. Current state of legislation

The Ambient Clean Air Act is in force in the country since 1996 and is the one providing basic legal regulation of the clean air protection activities.
The Draft Proposal for a Council Directive on the Incineration of non-hazardous waste is fully adapted in the existing national legislation. Partly adapted are the Directives 70/220/EEC, 72/306/EEC, 88/77/EEC, 84/360/EEC and 88/609/EEC. Fully transposed are Directives 89/369/EEC and 94/67/EC concerning the determination of emission limit values for certain production activities. Transposed are Air Quality Framework Directive – 96/62/EC, the proposed "daughter" Directive COM (97) 500 and Directive 92/77/EC.

II. Actual state

Emissions

The assessment of the emissions of all sources of dangerous substances includes 2436 enterprises, polluting the ambient air. The following data concerns the basic compounds which determine ambient air quality - sulphur dioxide, nitrogen dioxide, dust, carbon monoxide as well as some specific pollutants – lead, mercury, cadmium, dioxins, furans and polyaromatic hydrocarbons.
Emissions of dangerous substances in the ambient air in 1997.

Pollutant	Units	1997	Change in % on 1996	Remarks
Gases				
Sulphur oxides	Thousand tons	1365	- 4	such as sulphur dioxide
Nitrogen oxides	Thousand tons	225	- 13	such as nitrogen dioxide
Volatile Organic Compounds	Thousand tons	120	- 18	
Methane	Thousand tons	533	+ 8	
Ammonia	Thousand tons	77	- 7	
Carbon monoxide	Thousand tons	515	- 16	
Dust and heavy metals				
Dust	Thousand tons	265	- 13	
Mercury	Tons	4.3	- 9	
Cadmium	Tons	14.2	- 1	
Lead	Tons	231.2	- 17	
Persistent Organic Pollutants				
Polyaromatic hydrocarbons	Tons	364	- 25	According to Bronev
Dioxins and furans	Grams	309	- 9	According to a list of 15 types
Hexachlorbenzole	Kilograms	47	- 46	

The energy industry is the biggest source of sulphur dioxide (85%), nitrogen dioxide (30%) and dusts (45%) from all emissions in the country.

The largest anthropogenic sources of Volatile Organic Compounds (VOC) are road vehicles – petrol-engined vehicles – 40% and industry – about 35%. 38% of the nitrogen oxides are due to the road transport.

71% of the emissions of methane originate from the extraction and the production of fossil fuels. The other significant source of methane is the transport of gas.

Agriculture is primary source of ammonia – 50% of the entire quantity, while another 26% come from the production of nitrogen fertilisers.

Burning of coal in thermal power plants, non-ferrous and ferrous metallurgy is the main sources of mercury. The thermal power plants discharge 35.9% from the entire quantity for the country.

Almost one third of the emissions of cadmium are due to the burning of liquid fuels in small combustion facilities at local heating stations.

Industry and automobile transport are the main sources of lead pollution.

Burning of fuels in the domestic sector causes nearly 70% of the emissions of polyaromatic hydrocarbons.

Combustion processes are the main source of dioxins and furans. Thermal power plants discharge about 40% of the entire quantity.

All obligations of the country related to the production and consumption of ozone-depleting substances have been met:

Reducing and phasing out the production and consumption of ozone-depleting substance in accordance with the Vienna Convention and the Montreal protocol

Position	Name	Copenhagen amendments (November 1992)
1.	CFC (freons) 11, 12, 113, 114, 115	Base year 1986 Halting until 1989 75% by 1994 100% by 1996
2.	Halons 1211, 1301, 2402	Base year 1986 Halting until 1992 - 100% by 1994
3.	Other fully halogenated freons (CFC) 13, 111, 112, 211, 215, 216, 217	Base year 1989 85% by 1995 100% by 1996
4.	Tetrachlormethane	Base year 1989 85% by 1995 100% by 1996
5.	HBFC	Base year 1989 100% by 1996
6.	Methyl bromide CH_3Br	Base year 1991 Halting until 1995
7.	HCFC 21,22,31,121,122,123,124	Base year 1989 Halting until 1996

Ambient air quality and main polluted regions

A resolution of the Council of Ministers from 1994 proclaimed 14 regions as “hot spots” taking into account the degree of pollution with harmful substances. One hundred and seven monitoring stations have been set in the fourteen polluted air basins of the country.

The majority of the stations monitor the concentrations of basic indicators, which determine the ambient air quality at the ground’s layer – dust, sulphur dioxide, nitrogen dioxide and lead aerosols emissions. The number of stations monitoring the other two basic indicators - ozone and carbon dioxide is limited because of the lack of automatic monitoring equipment.
Dust:

Its concentrations are traditionally high throughout the country. The main source of dust emissions is the burning of solid fuels in thermal power plants, households and industry. The highest average annual concentrations in the country for the last couple of years, incl. 1997 have been registered in Pleven, Pernik, St. Zagora, Sofia, Plovdiv,

Dimitrovgrad, Rousse, Pirdop (between 1.2 and 2 times above the maximum admissible limit - annual average).

Sulphur dioxide:
The trend towards stabilising the annual sulphur dioxide concentration from the last 3 - 4 years close to and above the maximum admissible limit continues. Sulphur dioxide pollution causes air quality problem for most of the inhabited areas Devnia, Plovdiv, Varna, Elisejna, Pernik, Kurdjali, Pirdop (between 1.2 and 3.5 times above the maximum admissible limit - annual average).

Nitrogen dioxide:
The highest concentrations of nitrogen dioxide have been measured at road junctions with heavy traffic – in Sofia and Plovdiv as well as at stations monitoring the industry impact on the air quality in populated areas – Dimitrovgrad and Botunetz. The trend towards monitoring increased nitrogen dioxide concentration in stations monitoring air pollution caused by vehicles in Sofia, Varna, Plovdiv, Rousse and other cities continues.

Lead aerosols:
A general trend towards decreasing the annual concentrations of lead aerosols for the country as a whole continues. The percentage of days with concentration above the maximum admissible limit - daily average – in Kurdjali has been reduced to 12% in 1997. An exception is the town of Pernik where the annual concentration level has increased 75%.

Hydrogen sulphide:
Highest concentrations are registered in Sofia, Nikopol, Pirdop and Zlatitza, Silistra, Bourgas. A trend towards decreasing the measured concentrations has been observed in Pirdop and Zlatitza. Exceeding the maximum admissible limit - annual average has been monitored in Pirdop and Zlatitza – 1.8 times, Nikopol – 2 times and Sofia – 3 times.

Ammonia:
Air quality monitoring stations have been set in settlements with environmental problems related to ammonia emitting production processes. Ambient air pollution problems due to ammonia experience Dimitrovgrad, Bourgas, Kameno, Nikopol and Vratza. Exceeding the maximum admissible limit - annual average varies between 1 times for Dimitrovgrad up to 5 times for Nikopol.

Cadmium:
It is monitored in the region Assenovgrad – Kuklen – D. Voden – Plovdiv. Concentrations exceeding the allowed annual limits have been measured in all four settlements. The percentage of days in 1997with concentration above the maximum admissible limit - daily average was: in Assenovgrad – 42%, D. Voden – 40%, Kuklen – 29% and Plovdiv (station “Block Gigant”) – 25%.

III. Basic objectives

The specific objectives derive from the national priorities and the obligations by the virtue of signed and ratified by Bulgaria global and regional conventions and their protocols.

Reducing the emission levels of sulphur dioxide, nitrogen dioxide, VOC and ammonia (thousand tons)

Pollutant	Base year			1990	Target years			
	1980	1987	1988		2000	2005	2010	Change in % on 1990
Sulphur dioxide	2050	-	-	2020	1374	1230	1127	- 44
Nitrogen dioxide	-	416	-	376	380	350	290	- 23
Volatile Organic Compounds	-	-	309	217	244	198	192	- 12
Ammonia	-	-	-	144	109	126	126	- 13

Reducing the emission levels of heavy metals (in tons)

Pollutant	1990	Target years			Change in % on 1990
		2000	2005	2010	
Lead	436.8	347.0	170.9	176.7	- 60
Cadmium	28.2	12.2	12.5	11.9	- 58
Mercury	13.2	6.6	6.5	5.8	- 56

Reducing the emission levels of Persistent Organic Pollutants

Pollutant	Units	1990	Target years			Change in % on1990
			2000	2005	2010	
Polyaromatic hydrocarbons	Tons	677	542	574	621	- 8
Dioxins/Furans	Grams	554.2	453.1	433.3	425.0	- 23
Hexachlorbenzole	Kilograms	544	84	87	109	- 80

Targets following the UN Framework Convention on Climate Change – ratified in 1995 and the Kyoto Protocol – signed in 1998

According to the National Action Plan on Climate Change, which will be submitted to the Council of Ministers, a number of envisaged measures for implementation and a scenario for total emission reduction has been developed. The target is to reduce emissions to the following levels:

Emissions of greenhouse gases, calculated in CO_2 equivalent – scenario with total emission reduction, tons CO_2 equivalent

Emission/Year	1988	2000	2005	2010	2015	2020
CO_2	96878	61741	69965	72501	79060	73462
CH_4	29667	19509	27951	29232	30786	33243
N_2O	9548	10850	12400	13020	14880	14570
Total	136093	92100	110316	114753	124726	121275

According to the scenario above, the emissions in 2008 are expected to be 17.5% below, and in 2012 – 14% below the base year levels.
Reducing the production use of hydrochlorofluorocarbons (HCFCs).

Meeting the Convention and the Montreal Protocol obligations of the country, the following targets are set:

HCFC 131, 132, 133, 141, 142, 151, 221, 222, 223, 224, 225, 226, 231, 232, 233, 234, 235, 241, 242, 243, 244, 251, 252, 253, 261, 262, 271	Base year 1989 35% by 2004 65% by 2010 90% by 2015 99% by 2020 100% by 2030

Phasing out the distribution and use of leaded petrol by 31.12.2003

To meet this goal, a number of measures will be implemented at different stages; all of them included in a National Programme, adopted by the Government in 1998. The Programme includes legislative, institutional and investment procedures.

Ambient air quality
The objective is to reach the limits for harmful substances in ambient air: oxides of sulphur, airborne particles (PM^{10} and $PM^{2.5}$), lead as well as the limits for health and plant protection for ozone by 2006. For the nitrogen oxides – gradually – 2005 and 2010.

IV. Priority investment measures

Priorities are set on the basis of the following criteria:
Risk to human health;
Impact on vulnerable ecosystems;
Fulfilment of international obligations of the country, arisen from international agreements and treaties;
Project's location in "hot spot" regions.
These criteria determine the following priority areas:
Limitation of heavy metals emissions from metallurgical factories and caused by the use of leaded petrol;
Limitation of dust particles emissions from the production of electricity and thermal energy, by metallurgical and other sectors;
Limitation of sulphur dioxide emissions and other nauseous gases.

Basic priority investment measures

Construction of desulphurization installations at large combustion facilities; introduction of primary and secondary measures related to nitrogen oxides and rehabilitation of electrostatic precipitator; by 2002 – put in operation the desulphurization installations of plants 7 and 8 of the "Maritza-Iztok 2" thermal power station;
Increase of the share of natural gas and switch to low sulphur content imported coal by change in the combustion base – reconstruction of facilities;
Increase of the production of unleaded petrol (0.001 g/l lead) – refinery reconstruction;
Provisions for the production of diesel fuel with sulphur content up to 0.035% and industrial heavy fuel – up to 0.2% by 2004; limiting the sulphur content to 0.005% and industrial heavy fuel – up to 0.1% after 2005 - refinery reconstruction;
Reduction of volatile organic compounds emissions during storage and transport of petrol – reconstruction of storage tanks, loading terminals, petrol stations and vehicle petrol tanks – gradually by 2010;
Reduction of volatile organic compounds emissions from certain productions – on stages starting in 2003 – reconstruction and modernisation of industries;
Reduction of heavy metal and persistent organic pollutants emissions from the energy sector and the industry by putting in place filter and absorbing installations – 2000/5 – 2010;
Reconstruction and modernisation of central heating systems and increasing the number of their consumers;
Enhancing the gas supply for household and industrial consumers – creation of the necessary infrastructure;

Reconstruction of the existing and building new facilities in the metallurgy sector for preventing dust, sulphur dioxide and heavy metal emissions.

Water quality

Current state of legislation

At present the existing legislation in the water sector does not correspond in the necessary degree to the requirements of the EC directives. The legal sector regulation is based on the Law for Protection of Water and Soil from Pollution (1963) and the Water Law (1969). The new Draft Water Act has been developed and it introduces the European requirements in this field. The Council of Ministers has approved the draft of the Water Act and a procedure for its adoption is under way in the National Assembly. Bulgaria is a party to a number of international conventions and agreements, concerning water issues.

II. Water supply and sewerage network in settlements

1.Actual state

The country has a well-developed water supply system, servicing 98% of the population. The number of settlements with water supply is 4517, which constitutes 84.6% from all settlements (100% of the towns and 81.32 % of the villages).

The quality of the drinking water supplied for the population is regulated by the Bulgarian State Standard "Drinking water" with organoleptic, physical, chemical, microbiological and radiological parameters. About 3% of the population connected to drinking water supply systems uses water with higher level of nitrates. High levels of manganese in the water in some regions have a negative impact on the organoleptic qualities of the water and causes problems for the maintenance of the water supply network and water facilities.

The water supply systems include the following main facilities in the country:

- 50000 km water supply network within the settlements;
- 24000 km water supply network outside the settlements;
- 10 reservoirs intended for water supply;
- 52 drinking water treatment plants with overall capacity of more than 20 m^3/sec;
- 5900 drinking water tanks;
- 3850 water supply pump stations.

Water utilisation is about 120 litres/person/day with a tendency for reduction because of rising price of water and improved accuracy of measurement.

Drinking water losses are about 52.77%. For the period 1980 – 1997 the relative share of utilised water has fallen from 84% to 47.23%. This is due mainly to the following reasons:

- Worn-out water pipe network. About 70% of the pipes are made of asbestos and cement and have been in use for more than 20 years;
- Unsatisfactory level of control of the water supply system management;
- Reduced volume of utilised drinking water for industrial use;
- Incorrect measuring of volumes of water supplied.

Four water supply reservoirs, 7 drinking water treatment plants, 58-km pipework and other facilities are under construction at present.

The total length of the constructed sewerage network is 7718 km for the entire country with 321 983 sewerage connections. The number of settlements with sewerage systems is 277, out of which 167 are towns. The percentage of towns with sewerage systems is 70.2%, and of villages – 2.1%. The construction of sewerage systems is unsatisfactory. In most of the villages, there is no sewerage network and waste water is discharged using short drains to cesspits and septic tanks.

The actual state of the sewerage network in the country is not good. Part of it (17%) needs to be reconstructed because of ageing, including moral one. Many of the constructed sewerage networks in the settlements have been built in the period 1960-1965. Because of that the increased volume of waste water can not pass through it and a reconstruction is needed.

2.Basic objectives

2.1. Improve the efficiency of water supply and sewerage network services and achieve better quality.
2.2. Improve the technical condition of water supply and sewerage network systems and the level of management on companies.
2.3. Reduce the state and municipal subsidies and introduce private investments in the sector.
2.4. Analyse in details the parameters from EC Directive 98/83/EEC in regard to how close are the physical, chemical and biological parameters to those in Bulgarian State Standard 2823/83. On the basis of that analysis, actions will be taken for their transposition in full in Bulgarian legislation.
2.5.Replace of worn-out sewerage network.
2.6.Complete construction of the sewerage network in larger settlements.
2.7.Enhance the existing and construct new sewerage network in settlements close to vulnerable ecosystems and resorts.
The criteria for selection of priority investment projects in the area of water supply are:

- The level of water supply for the respective settlement;
- Water supply rationing;
- Drinking water quality in the settlement.

III. Waste water treatment and state of the rivers, lakes and territorial marine waters

1. Actual state

1. . Total volume of discharged waste waters from settlements and entities in the country is 1 152 198 thousand m^3.
2. . Volume of waste water discharged in sewerage and treated subsequently:

Table 1

Waste water		1997
Total volume discharged	thousand m^3	745 673
Treated	thousand m^3	433 200
	% from the total volume	58

3. .Volume of waste water discharged enterprises:

Table 2

Waste water (thousand m^3)		1997
Discharged*	Total	547 380
Incl. waste water discharged in surface water and sea	Total	406 525
	Untreated	137 864
	Treated	268 661

Comment: * - total discharged in sewerageand in surface water and sea

4. .Capacity of waste water treatment: percentage of treated water from the total volume of discharged waste water:

Table 3

Waste water	1997
Total volume – thousand m^3	1 152 198
Incl. treated – thousand m^3	701 861
% from the total volume	61

5. .Share of water treated in accordance with the requirements of Directive 91/271/EEC concerning urban waste water treatment plants as percentage from the total volume of discharged water in their range:

Table 4

Waste water	1997
Total discharged – thousand m^3	1 152 198
Share in % in accordance to the requirement of Directive 91/271/ÅÅÑ	43

The share of all biologically treated waste water meeting the requirements in Directive 91/271/EEC is 43% from the total volume of discharged waste water in 1997.

6. .Number of existing Urban Waste Water Treatment Plants (UWWTPs) with:
7.

- mechanical treatment;
- biological treatment.

Table 5

		1997
UWWTP (number)	Total	51
	With mechanical treatment	13
	With biological treatment	38
capacity (m^3 /day)	Design (D)	1 852 778
	Actual (A)	1 183 576
	(A/D)x100, %	64

Fifty-one urban waste water treatment plants with design capacity of 1 852 778 m^3/day functioned in the country in 1997. Because of the uncompleted sewerage system and partial use of the treatment facilities, the actual working capacity amounts to 1 183 676 m^3/day, which is about 64% from the design capacity.

1. . State of surface watercourses and basins.

The total length of the river network is 19 761 km. The number of stations of the National environmental monitoring system (NEMS) – subsystem “Water”

is 253, covering 3685 km. These stations cover the main part of the anthropogenic endangered regions which are environmentally vulnerable and some of the fund stations. The state of the surface watercourses is shown in the following table, according to the national classification system, which has three categories (Regulation No. 7/1986):

Table 6

Category	I	II	III	outside category III
Percentage of stations	4	38	34	24

According to the classification criteria for the river water quality used in the report "Europe's Environment: second assessment" (Denmark 1998), more than 25% from the monitoring stations reveal bad or very bad water quality. NEMS includes 13 stations for lake monitoring – Beloslav, Varna, Bourgas (Vaya) and Mandra. Regarding one of the main factors for determining lake water quality - phosphorus and nitrogen, in 25% of the stations for monitoring phosphorus concentration, values in the range 0.25-0.5 mg/l were registered. In 50% of the stations, the concentration of nitrogen is 0.75 mg/l and in the rest – in the range 0.75-1.5 mg/l. This shows a trend towards severe eutrophication processes in the monitored lakes.

1. . The percentage of coastal marine water, meeting the requirements of Directive 76/160/EEC and national requirements (Regulation N 8/1986) for the period 1992-1998 according to data from 26 stations for sampling of marine waters from NEMS – subsystem "Water" is 64% (according to BOD_5).

2. Basic objectives

2.1. Increase the share of treated waste water, meeting the requirements of Directive 91/271/EEC, to about 64%.

2.2. Shift of 36% of the monitoring stations in higher category as follows:

Table 7.

Category	I	II	III	Outside category III
Percentage of stations	4	56	31	31
Difference compared to 1997	0	18	3	15

2.3. Increase up to 90% of the share of Black Sea coastal marine water, which meet the requirements of Directive 76/160/EEC and the national requirements of Regulation No. 8 from 1986.

3. Basic investment measures

For the purposes of the implementation of the national legislation requirements, provided for in the Draft Water Act, the provisions of the Directive 91/271ÅÅÑ, and the country's commitments under the Convention on Co-operation for the Protection and Sustainable Use of the Danube River and the Convention on the Protection of the Black Sea Against Pollution, a National Programme for priority construction of Urban Waste Water Treatment Plants for the settlements in the Republic of Bulgaria with more than 10 000 inhabitants was developed.

The Programme's objective is to determine for all rivers basins the priorities for construction of Urban Waste Water Treatment Plants (UWWTP) for all settlements in the country with more than 10 000 inhabitants.

The National Programme for priority construction of Urban Waste Water Treatment Plants for the settlements in the Republic of Bulgaria with more than 10 000 inhabitants includes the following river basins and regions:

Table 8.

	River Basin	NUMBER OF UWWTP needed			
		New	Construction completion necessary	Expansion, reconstruction and modernisation necessary	Total
1	Black Sea Coast	8	1	3	12
2	Kamchia River	3	1		4
3	Provadia and Devnya River	2		1	3
4	Ogosta River	2		2	4
5	Iskar River	7	1	1	9
6	Vit River	1		1	2
7	Osum River	2	1		3
8	Yantra River	6	1	2	9

9	Roussenski Lom River	1		1	2
10	Dobrudja Rivers and ravines		3	1	4
11	Struma River	4		3	7
12	Mesta River	2		1	3
13	Maritza River	17	1	6	24
14	Tundja River	3	1	1	5
15	Arda River	5			5
16	Danube River Cities	8			8
	TOTAL:	71	10	23	104*

Among all identified as necessary for construction UWWTP, in the Programme are determined 36 plants of national priority, which construction, reconstruction and modernisation is to be completed within the duration of the Programme.

Urban Waste Water Treatment Plants that need to be constructed are listed in the National Programme in order of priority on the basis of the following criteria:

- the number of people exposed to health risk, most often arising during discharge of waste water close to water supply facilities for human consumption, and during discharge of waste water close to the Black sea coast, or at other places where water is used for bathing;
- imission state and category of the waste water intake body;
- the place of discharge of untreated waste water: higher priority have those UWWTP in an area of deteriorated environmental state where the water quality in the water intake body does not correspond to the design category; in the upper stream of the water intake body; in protected areas, or in areas with vulnerable ecosystems;
- number of inhabitants for the place where the plant is to be built;
- degree of completion and use of the existing sewerage system and the sewerage collector to the place of the future treatment plant;
- the degree of completion of a plant which is in a construction stage;
- international obligations of the country;
- existence of a site for a plant, prepared design and decision on environmental impact assessment report;
- required capital funds to carry out a stage and complete operation of the plant and comparison with the expected environmental effect.

WASTE MANAGEMENT

I. Current state of the legislation

The Act on Limitation of the Harmful Impact of Waste on the Environment, passed in 1997 and the respective regulations to it form the legislative basis for waste management. There are 8 regulations in force.

This regulatory framework is in compliance with the following Directives of the European Union: 75/442/EEC on waste and Decision 94/3/EC; 91/689/EEC on hazardous waste and Decision 94/904/EC; 89/429/EEC and 89/369/EEC - on existing and new municipal waste incineration plants; 94/67/EEC on the incineration of hazardous waste; Proposal for a directive on Landfill of waste (COM/97/105), Regulation EEC/259/93 on supervision and control of shipments of waste within, into and out of the European Community. The Republic of Bulgaria has ratified the Basel convention on the control of transboundary movements of hazardous waste and their disposal.

II. Actual state

The amount of waste generated in 1997 is 48 million tonnes, mainly industrial waste. The distribution of the waste generated by type during the period is as follows:

Table 1

Year	Waste generated by types			
	Municipal waste In thousand tonnes	Construction waste In thousand m^3	Industrial waste In thousand tonnes	Hazardous waste In thousand tonnes
1997	3628	805	43586	1100

1. Municipal and construction waste

Statistical data shows that in 1995-1997 the average annual amount of generated municipal waste per capita was 500 kg/person. However, the experts' assessment of that amount is considerably lower. The amount of 3,6 million tonnes of municipal waste registered in 1997 was generated by 1126 settlements in which there is a system for waste collection and transportation and where 77% of the country's population is concentrated.

83 % of the construction waste was generated in the big cities of the country.

Waste Treatment Technologies Used

Disposal is the only way of municipal waste treatment at present. The number of landfills for controlled waste collection and transportation was 682 in 1996 and the percentage of waste accumulated there was 99% of collected waste. With a few exceptions, the landfills mentioned do not comply with the new requirements. According to the data supplied by the municipal administrations, almost 27 % of the existing landfills are under their control and that represents 54 % of the area covered by landfills.

About 300 000 m3 of the construction waste are collected in specialised landfills for construction waste. Some ? of the production remains of construction materials are used in road construction and recultivation of soils. The rest is deposited in specialised landfills. There are cases of construction waste use in the exploitation of the landfills for municipal waste but this practice is a rare one.

2. Industrial waste

The monitoring of the industrial waste so far is conducted according to specification of the National Statistical Institute, which includes 82 types of waste.

Information on the amount of industrial waste generated is presented in table 2.

Table 2

	1997 In thousand tonnes
Amount generated	43586
Organic	1418
Inorganic	42168
Amount deposited in landfills within the year1	43024
Organic	1171
Inorganic	41853

The industrial waste generated in 1997 was 43,5 million tones. Mining and floatation industries2 have the largest relative share in the structure of industrial waste generated. Thermal power plants and chemical industries are the next biggest industrial waste generators.

The mining and floatation enterprises, which are declared in state of liquidation or conservation, are facing serious problems with their tailings ponds where big deposits of waste, resulting from mineral processing, are concentrated. The total area damaged by such enterprises exceeds 16 700 dca, 5 100 dca of which are old tailings ponds. More than 270 million tones of hazardous waste are deposited in the latter, resulting from the processing of copper-pyrite and lead-zinc ore.

Waste Treatment Technologies Used

Disposal in landfills is the most commonly applied method for industrial waste treatment. Over 99 % of the amount of waste deposited is concentrated in landfills, owned by the enterprises and the rest is deposited in the urban landfills together with municipal waste.

The greater part (61 %) of food industry's waste is reused in the agriculture, as food in livestock farming and fertilisers. The rest is deposited in the urban landfills together with the municipal waste.

The information presented by the enterprises reveals that ferrous and non-ferrous metal (98 %), paper (89 %) and glass (62 %) waste are most often subject to recycling. Depending on organisation of activities within the respective industrial units the waste matter collected is directly transferred to recycling companies or to licensed companies trading with recyclable waste.

1.3. Hazardous waste

The average annual amount of hazardous waste generated in Bulgaria within recent years is about 1,3 million tones, 40 % of which is formed by 11 most commonly spread types of waste (pesticides, waste oils, sludge from industrial waste water, hospital waste etc.) Usually they are generated in small quantities by a large number of sources. General data on the generated hazardous waste does not include waste generated by primary processing of non-ferrous metals ores. This amount is included statistically within the waste generated by mining and floatation enterprises.

Data shows that over 500 enterprises generate less than 1 000 Million tonnes/year, about 40 enterprises generate between 1000 and 10 000 Million tonnes/year and 14 enterprises generate over 10 000 Million tonnes/year. A comparison between the amount of waste and the number of its sources shows that about 30 enterprises generate more than 90 % of the hazardous waste in Bulgaria.

The information available represents mainly quantitative characteristics of waste. The absence of established national laboratory system for hazardous waste does not allow more precise identification and control of this type of waste.

Waste Treatment Technologies Used

About 30 enterprises treat their own waste, which constitutes more than 90 % of the hazardous waste generated.

The main method for hazardous waste treatment is disposal (77% of the total amount of hazardous waste disposed) in landfills on site of the enterprises. These landfills have exhausted their capacity and do not comply with the requirements of the modern national legislation, which is already harmonised with the respective European directives concerning the sector in question. Regional landfills for hazardous waste are not used.

There are several incinerating installations but they can just meet the needs of the companies for which waste they have been constructed. Installations for hospital waste incineration have been built in some of the big cities, former district centres. However, in most cases they do not comply with modern requirements for installations of this type and they do not treat waste from all clinics in the respective region.

1.4. Waste generated from mining and processing of uranium ores

As a result from uranium industrial activities in Bulgaria 40 mines and two hydro-metallurgical works have been exploited. More than 20 000 000 tonnes waste, deposited in 3 tailings ponds and about 300 waste banks were generated. More than 17 00 000 m^2 agricultural and forestlands were deteriorated and contaminated. More than 1 000 l/sec contaminated water is discharged by the sites of uranium mining. Rock waste banks have radioactivity values 2-3 up to 100 times higher than the background values for the different sites in question.

The main pollutants in the water discharged by the closed sites of uranium industry are as follows:

- uranium - 0.1 - 15 mg/l, depending on season flow rate of the diluting water;
- radium 226 - 0.08 - 1.5 Bq/l;
- ðÍ - 3 - 8;
- sulphates – up to 19 500 mg/l.

he regions assessed, as posing major risk to human health, from a radiological point of view are these of Buhovo, Yana, Seslavtsi, Eleshnitsa and Sliven. The reason is that in the past the volume of the mining activities and hydro-metallurgical processing was great. Rehabilitation activities were undertaken with priority for these regions.

III. Main objectives

3.1. Prevention and reduction of waste generation

Priorities:

1. Reduction of municipal waste for final treatment to 350 kg average annual amount per capita up to year 2005 and with a following stabilisation, in circumstances of the expected increase of the consumption by the population.
2. Stabilisation of the amount of industrial and hazardous waste generated to the levels of year 1996, having in mind the expected increase in the production within the period of the duration of the Programme.
3. Reduction of the harmful substances in waste.
4. Limitation of the amount of dangerous components in municipal waste flows.
5. Prevention of the generation of waste, including:
6. Regulation and encouraging the setting up of requirements for environmental management control, including:

- Introducing a regime of permits concerning waste generation by large industrial enterprises, in connection with the implementation of the Directive 96/61/EC concerning integrated pollution prevention and control (the IPPC Directive) and a subsequent implementation.

3.2. Re-use and recycling

Priorities:

1. 20% increase in the amount of waste recycled in the country by year 2005 and with 30% by year 2010.
2. Improvement in quality of the waste collected for the reasons of recycling.
3. Gradual introduction of separate waste collection schemes.
4.Increase in the types of waste, collected for the purpose of recycling and re-use.
5. Construction of new facilities for recycling of waste (incl. centres for dismantling of end-of-life vehicles).
6. Enlarging the scope of the deposit system for multiple use packaging and developing and introducing a system for labelling of recyclable products and packaging.
7. Enlarging the system for waste oils collection.

3. Setting up of a deposit system for used accumulators.

3.3. Improvement of organisation of collection and transport

Priorities:

1. Optimising of the management and operative structures.

2. Establishment of joint companies, which are to replace the existing municipal companies.
3. Introducing the approach of granting a concession for the activities related to waste collection and transport.
4. Implementation of modern multifunctional systems for waste collection, which depend on various factors as construction intensity, amount of waste generated and urban transport and communication planning.
5. Replacement of the outdated (amortised) containers with new, modern ones for separate waste collection and introducing of contemporary specialised transport equipment.
6. Optimising the collection frequency and the routes:
   - for municipal waste – depending on the number and density of the population.
   - for industrial and hazardous waste – depending on the amount of waste generated.
7. Introducing the timetables for collecting of large dimension domestic refuse, white goods and other specific domestic waste.

3.4. Environmentally sound waste disposal

3.4.1. Municipal waste

Priorities:

1. Construction of small number high efficiency facilities for waste disposal, in order to implement effective monitoring and control.
2. Implementation of the requirements of the Proposal for a directive on Landfill of waste (COM 97/108):
? Waste must be treated before being landfilled.
? Achieving of the mentioned below levels of re-use of the biodegradable waste components, which shall lead to decrease of the methane gas produced in the municipal waste landfills:

- It is required up to year 2000 the amount of biodegradable municipal waste going to landfills to be reduced to 75% of the whole amount (as weight) of this waste generated in year 1993, considered as a basis one.
- It is required up to year 2000 the amount of biodegradable municipal waste going to landfills to be reduced respectively to 50% in year 2005 and to 25% in year 2010, of the whole amount (as weight) of this waste generated in year 1993, considered as a basis one.
-

? Recovery or burning in flame of the gas generated.

3.4.2. Industrial and hazardous waste

Priorities:

1. Provision of instruments, actions and resources necessary for establishment of an integrated system of facilities and installations for industrial and

hazardous waste disposal, taking into account the best available technologies in the respective field.
2. Construction of facilities and installations with national and regional importance, including the establishment of new centres for hazardous waste treatment, in the period after 2002.
3. Adapting the state of the existing facilities and installations to the existing legislation requirements up to year 2005; phasing out the use of the facilities, which pose a risk to the environment and human health, its closure and subsequent recultivation.
4. Reduction of the amount of the waste, deposited in landfills and increase of the share of the waste envisaged for recycling and recovery.
5. Introducing a ban on the disposal of certain types of hazardous waste.
6. Approving of the procedures for issuing permits concerning the activities and facilities for industrial and hazardous waste treatment.
7. Non-allowance of import of waste for disposal on the territory of the Republic of Bulgaria.
8. Establishment of a system of facilities and installations for hazardous hospital waste disposal up to the year 2010.

3.5. Diminution of the risk from past contamination of waste

Priorities:

1. Inclusion of the sites with past contamination of waste within a system for prioritisation and monitoring remediation actions.
2. Closing down of the uncontrolled landfills and dumps, which could not be adapted as to meet the modern requirements for environmental protection.
3. Removal of contaminations, caused by existing or already closed waste dumps and landfills and cleaning-up of priority sites.
4. Limitation of future risks by the treatment installations.
4. Removal of contaminations, caused in the past through the implementation of remediation programmes within the framework of privatisation process of the large industrial enterprises.

3.6. Remediation of the environment in the regions of closed sites of uranium industry and elimination of the health risk to the population of these regions.

Priorities:

1. Completion of the technical liquidation of the mining and processing uranium sites;
2. Implementation of a qualitative, technical and biological recultivation, in regard to the future use of the lands of the agricultural and forest fund;
3. Implementation of a complex and systematic monitoring of the affected regions;
4. Undertaking of full treatment of the waste water, discharged in the regions of the former sites of uranium mining;

5. Comprehensive assessment and implementation of rehabilitation measures necessary in the regions of about 20 industrialised, experimental and exploration mines and sites, which are not included in the programme for liquidation of the consequences from the mining and processing of uranium ores.

IV. Main investment activities

A National Waste Management Programme was approved by the Council of Ministers in March 1999. The National Programme comprises an Action Plan and an Investment Programme for the period up to year 2002. It sets out specific institutional and investment measures that are to be initiated in the next four years. The measures laid down in the Programme are bound with time limits and refer to particular implementing bodies. The necessary financial resources and the possibilities for financial support are shown within. The following criteria is applied for the selection of priority projects:

- Risk to human health;
- Impact on vulnerable ecosystems;
- National or regional significance of the project;
- Compliance with the new legislation requirements;
- Fulfilment of international obligations undertaken by the country;
- Degree of project maturity for implementation;
- Stable financial characteristics.

Based on these criteria the following areas of highest priority have been identified:

- Solving of the problems with the waste deposited in the closed sites of uranium mining industry;
- Solving of the problems with hazardous waste generated by industry;
- Solving of the problems with municipal waste.

The main priority investment projects are as follows:

- Sanitation of 60 (sixty) uranium mining and processing industry sites;
- Establishment of 2 (two) regional centres for hazardous waste treatment;
- Construction of 6 (six) landfills for hazardous waste;
- Reconstruction and enlargement of existing landfills and construction of 50 (fifty) new landfills for municipal waste;
- Remediation of past contaminations, caused by large industrial enterprises (past environmental damages) : Stomana-Pernik, Non-Ferrous Works – Kurdzhali, Neftochim – Bourgas, Non-Ferrous Works – Plovdiv, Kremikovtzi, Assarel-Medet etc.

- Implementation of the Programme for Sanitation of the Hazardous Waste, deposited by the floatation of non-ferrous ore in the enterprises in liquidation process – 6 (six) tailings ponds.
- Construction of 6 (six) new facilities and installations for incineration of dangerous hospital waste;
- Construction of 5 (five) facilities for treatment of sludge from Urban Waste Water Treatment Plants;
- Establishing of 4 (four) regional centres for dismantling of end-of-life vehicles;
- Erection of a incinerator for hospital waste;
- Construction of 2 (two) installations for composting of municipal waste;
- Modernisation of the existing and construction of new facilities for waste recycling (waste oils, PET – bottles, accumulators etc.);
- Renovation of specialised containers and equipment for waste collection and transport.

NATURE PROTECTION

I. Current state of legislation

The existing Nature Protection Act was amended and supplemented in 1998. Its harmonisation with the European legislation comprises the regulation of special protection of a number of species, a ban on destruction of protected species of wild flora and fauna, introducing of a ban on the trade with protected species as well as implementing of sanctions for violation of these rules.

A new Forestry Act was adopted in 1998. It introduces modern principles for forestry resources management, its sustainable use and protection.

The Protected Areas Act, adopted in 1998, regulates the establishment and maintenance of a national network of protected areas, determines the institutions responsible for the general management, monitoring and security coverage of the protected areas, and lists the rights and obligations of the physical and juridical persons in this regard.

The Republic of Bulgaria has ratified and is a party to the following Conventions:

- Convention on Biological Diversity, ratified at 1996.
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar), ratified at 1986.
- The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), ratified at 1975.
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), ratified in 1991.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington Convention), ratified in 1990.

VI. The actual state

2.1 The biological diversity in Bulgaria

The biota of the country includes 94 mammals, 338 birds, 36 reptiles, 16 amphibians, 207 Black sea and freshwater fish, about 27 000 insects and other invertebrates, between 3500 and 3750 higher plants and more than 6500 lower plants and fungi.

The plants' endemites represent a share of 5% of the total flora diversity, taking into account that 8,8% of the non-insect species and 4,3% of the insects are endemic ones.

As rare species for our flora and fauna are listed more than 700 higher plants, 567 species of non-insect invertebrates, over 1500 insect species; 29 species of Black Sea and freshwater fish; 2 snake species; 78 birds and at least 10 species of large mammals.

The biodiversity in Bulgaria includes species and genetic resources, which are used also for commercial purposes. Typical commercial types are: Black sea and freshwater fish, over than 200 species of edible mushrooms and several hundred local medicinal plants as well as many relatives of cultivated indoor species.

2.2. Protected natural areas.

Before the adoption of the new Protected Areas Act (December 1998) the protected nature components were divided in seven categories: protected animal species, protected plant species and 5 categories of protected areas – reserves, national parks, natural monuments, protected localities and historical sites.

- The reserves are 90 and are situated on an area of 80561,5 ha. They are strictly protected territories, which include representative natural ecosystems and habitats of rare species. Any activities that could affect the distinctive nature characteristics are prohibited within the reserve boundaries. The majority of the reserves are situated in forestry ecosystems and more than 60% of their total area are included in the national parks.
- The national parks are 12 and cover an area of 351583,6 ha, which represent 3.17 % of the total country area. These are large protected areas, with great nature diversity, with considerable cultural and recreation significance, where the natural conditions and ecosystems are dominant factors. It is possible for other protected natural sites to be included within their boundaries and to fall under determined protection regime.
- The natural monuments and protected localities in Bulgaria are respectively 2241 and 123. The natural landmarks cover an area of 23408 ha, and the protected localities - 23527.1 ha. In most cases they are small territories from 1 up to 500 hà, where under protection are specific nature landscape elements,

such as waterfalls, caves as well as habitats of rare and endangered species and communities.

- The historical sites are 972 with area of 12139.4 ha.
- The protected plant species are 389.
- The protected animal species are 473.

The new "Protected Areas Act" determines the following categories of protected areas:

1. reserve;
2. national park;
3. natural monument;
4. maintained reserve;
5. natural park;
6. protected locality.

The Act stipulates the terms within which the old 5 categories of protected areas should be re-categorised into the new ones, according to the new Protected Areas Act.

III. Main Objectives

The main objectives, which are also in line with the Pan-European Biological and landscape Diversity Conservation Strategy, are preservation, conservation and restoration of key ecosystems, habitats, species and landscape characteristics.

Priorities for achieving the strategic objectives are identified on the basis of the following criteria:

- Degree of vulnerability of biological species and natural sites of importance;
- Significance of activities for protecting and maintaining biological diversity;
- Obligations resulting from national legislation;
- Obligations resulting from international legal act.

The National Biological and Landscape Diversity Conservation Strategy is the main document setting priorities for biodiversity conservation in Bulgaria. It was approved for by the Council of Ministers in 1998. The approval of the National Action Plan for Implementation of the Strategy by the Council of Ministers is forthcoming.

XI. Priority measures for achieving the objectives are:

XII. Expanding and strengthening the protected areas network (by the year 2003 protected areas will take 7.5% of the country's territory) by:

- Recategorization of all protected areas in accordance with the new protected areas categories established with the Protected Areas Act;

- Preparing an Operational plan for the development of PA network;
- Identifying sites or objects of special interest or concern with regard to their inclusion in the network;
- Developing Protected Areas management plans;
- Preparation and implementation of educational and awareness raising programmes for public information and education on the national and European importance of protected areas;
- Providing security for protected areas, carrying out restoration and supporting activities in them;
- Involving local population in protected areas conservation by creating environment for development of environmentally friendly agricultural practices and ecotourism development.

20. Strengthening the scientific basis for biological diversity conservation by:
    - Developing basic information for particular taxonomic groups, geographical regions, anthropogenic threats and impacts, as well as mitigation and restoration methods;
    - Improving the existing material basis for scientific research;
    - Revising Bulgaria's Red Data Book and developing new Red Data Books for taxonomic categories where there are no such books; additional information and data on species and community level;
    - Developing interdisciplinary research;
    - Providing better access and more effective dissemination of scientific information available.
26. Developing a national environmental network

The main objective of the national environmental network is to ensure beneficial nature conservation status of species, of sites of national and international value, as well as of ecosystems, habitats and landscapes in Bulgaria. The objective will be achieved by:

- Protection through integration in one complex of the most important sites from nature conservation point of view – areas where endangered species are to be found, representative ecosystems, typical sectors of the main types of habitats and landscapes;
- Ensuring the survival of specimens of all types of ecosystems, habitats and landscapes typical for Bulgaria and in their natural interaction;
- Providing for interactions between natural components to avoid the isolation of their populations and their genetical degradation;
- Providing sufficient in area and quality natural hides, zones for feeding, resting, reproduction of organisms living outside of the network;
- Providing possibilities for movement and exchange of individuals, populations and genetic material on as large surface area as possible;
- Ensuring the correlation of natural ecosystems in Bulgaria with respective regions in the neighbouring countries and incorporating these systems in the pan-continental network of nature territories;
- Providing better living environment for the local population and benefits from environmentally friendly activities with the aim of achieving sustainability of nature conservation.

PROTECTION FROM LANDSLIDES AND MARINE AND RIVER ABRASION

XXXIV. Actual state

Landslides and marine and river abrasion fall into the "calamities" group. Their occurrence poses a threat to security of settlements, resort complexes, roads, rail tracks, causes irreversible damage to agricultural land. About 1000 landslides in 350 settlements and resort complexes with a total surface area of 250 000 dca have been registered in the Republic of Bulgaria.

1.1. Danube river banks

General data:

- Total length of the Bulgarian river banks – 470 km
- Total length of eroded banks:

A/ active zone – 48.50 km;
B/ endangered zones – 50.20 km;
C/ endangered main banks – 17.30 km.

- Rock banks – 13 km.
- Reinforced banks – 59 km.
- Accumulative banks /variable/ - 162 km.

2. Black Sea coast

General data:

- Total length of the Black Sea coast – 378 km
- Total length of eroded coast:

A/ landslide processes – 55 km;
B/ abrasion processes – 143 km;

- Accumulative banks /variable/ - 141 km.
- Sand dune fields – 16 km^2
- Number of landslides – 164:

a/ relatively stabilised landslides – 78 on an area of 47 332 dca
b/ active landslides – 86 on an area of 5 190 dca

2. Inland landslides

General data:

- Number of landslides – 883:

a/ relatively stabilised landslides – 285 on an area of 118 000 dca
b/ periodically active landslides – 598 on an area of 86 000 dca

II. Software Provision

A programme for the protection of the high Danube banks along the entire Bulgarian stretch was prepared in 1996 and 1997. The surveys done identified seven active erosion zones 48 500 km in length. A National Programme for the Reinforcement of Landslides along the Black Sea Coast 1999-2003 and a National Programme against Erosion and for Reinforcement of the Danube River Banks were adopted in 1998.

Objectives of the Programmes:

- Provide systematic monitoring, analysis and control of landslides, riverine and marine abrasion processes.
- Clarify problems and causes of erosion processes.
- Regional division.
- Reinforcement activities for terminating the processes.
- Preventive measures for avoiding new processes.

POLICY IMPLEMENTATION INSTRUMENTS

2. Legislation development and its approximation with the European Acquis:
   - Developing Framework Legislation

- In short terms – passing the Water Act. The Draft Water Act has been approved by the Council of Ministers and submitted to National Assembly where the procedure for discussions and its adoption is already under way.
- Introducing the EC Directive for Integrated Pollution Prevention and Control into Bulgarian legislation in the medium term.
  - Adopting regulations to the Framework laws, as well as some Acts reflecting the requirements of specific European directives
  - A number of regulations to the Water Act will be prepared in the short and medium term. They will ensure full compliance with the following European directives: 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances; 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community; 80/778/EEC relating to the quality of water intended for human consumption; 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water in the Member states; 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources; Proposal for a Water Framework Directive COM 97(49); 78/659/EEC on the quality of fresh waters needing protection or improvement in order to support fish life; 79/923/EEC on the quality required of shellfish waters; 91/271/EEC concerning urban waste water treatment; 96/61/EC IPPC.

- Related to the Waste Act, the adoption of a Regulation for treatment and collection of end-of-life vehicles is forthcoming; regulations aimed at harmonisation with the following Directives: 91/157/EEC on batteries and accumulators containing certain dangerous substances and 75/439/EEC on the disposal of waste oils. Elaboration and adoption in the medium term of Regulation on packaging in compliance with 94/62/EEC; Regulation on the disposal of polychlorinated biphenyls and terphenyls - 96/59/EEC; Regulation on disposal of sludge from municipal waste water treatment plants – 86/278/EEC; Regulation on waste from the titanium dioxide industry - 92/112/EEC.

- In relation to the Clean Ambient Air Act forthcoming are:

In accordance with the short-term legislative priorities the adaptation for the following European Directives is under way: Directives 85/210/EEC, 93/12/EC, 98/70/EC, 88/609 and 94/63/EC. For the transposition of these directives, relevant regulations will be developed;
In the medium term the work for the transposition of the requirements of the following European directives is under way: 97/68/EEC, 99/13/EC and Decision 97/283/EC. In order to fulfil the obligations for approximation of our legislation with the European one, new regulations that amend or supplement the existing ones will be developed.
- Development and adoption of regulations to the Protected Areas Act, including Guidelines for management, assigning activities, guarding and control in the protected areas of exclusive state property; Guidelines for functions, tasks and structure of the National park Directorates; Regulation on the conditions and terms for developing protected areas management plans; tariffs for admission fees for protected areas; tariffs for compensating damage done in the protected areas.

- Development and adoption of other specific acts in the nature conservation area: Medicinal Plants Act, Trade with Endangered Species Act (Regulation 338/97/EC); Biological Diversity Conservation Act – it will introduce the remaining requirements of the European legislation in the area of species diversity protection – Directives 92/43/ EEC and 79/409/EEC.

0. Development and implementation of complex and sectoral programmes and plans at national and local level for practical implementation of legislation:

The priority of these activities arises both from the legislative requirements for the development of such programmes and from the nature of management processes itself, with regard to securing necessary recourses and conditions for practical implementation of legislation. Emphasis is put on the following main areas:

- Implementation of the National Waste Management Programme, adopted by the Council of Ministers in 1998 and its periodical update and supplement.
- Development of Waste Management Programmes and Municipal regulations on waste disposal and sanitation in the settlements by municipalities, which still have not met their obligations, set with the Waste Act. Implementation and periodical update of these programmes by municipalities which have developed them.
- Implementation and update of companies' programmes for waste management and development of such programmes by companies, which still have not met their obligations, set with the Waste Act.
- Adoption by the Council of Ministers of the elaborated National Programme for Priority Construction of Urban Waste Water Treatment Plants.
- Development of Water Management Plans for each River Basin after the Water Act is passed.
- Implementation and periodical update of the National Programmes for protection against landslides and riverine and marine abrasion.

- Adoption by the Council of Ministers of the elaborated National Action Plan for Biodiversity Conservation for the implementation of the National Biological Diversity Conservation Strategy adopted by the Government.
- Development of management plans for all protected areas in compliance with the Protected Areas Act.
- In the field of air quality protection long term municipal (involving several municipalities) programmes for air quality improvement will be developed, as well as operational plans for action in situations of high concentrations of harmful substances in the ambient air.
- Implementation by stages of the National programme for phasing out the production and use of leaded petrol which was adopted by the Government in 1998.
- Continuing the implementation of the National programme for phasing out the use of ozone depleting substances.
- Approval of a programme and action plan for reducing sulphur and nitrogen oxides emissions from big combustion installations, implementing Directive 88/609/EEC with its amendments and the protocols to the Convention on LRTAP (year 2000/1).
- Development and approval of a programme for reducing volatile organic compounds emissions from petrol distribution (94/63/EEC).
- Development of a programme for limitation and further reduction of lead and sulphur content in liquid fuels, including market control and marketing, implementing Directive 98/70/EEC.
- Development of a programme for reducing nitrogen oxides and volatile organic compounds emissions from vehicles (2000/2).
- Development of a programme for reducing persistent organic pollutants emissions.
- Development of sectoral programmes and actions plans (industry, energy, and agriculture) for measures for implementing the national action Plan for the UN Framework Convention on Climate Change (2000/2).
- Development of complex municipal environmental programmes. With few exceptions municipalities have not undertaken the development of such programmes.

19. Institutional strengthening:

Developing the institutions and the administrative capacity is an important prerequisite for the implementation of legislation and is promoted in several aspects:

- Optimisation and clear distinction of functions of the existing administrative structures at central and regional level with regard to implementation of respective legislation or development of new one.
- Strengthening and improving co-ordination between central government institutions on the one hand and between central government institutions and municipalities – on the other.
- Training of staff in central and regional bodies, as well as staff in municipalities for the implementation of new legislation requirements developing programmes.

- Improving the level of technological support to the implementing bodies and more precisely introducing new information systems, expanding and improving the National System for Environmental Monitoring, etc.
- Improving the capacity of the Ministry of Environment and Water /MoEW/ and municipal control bodies in particular, with regard to control on the enforcement of legislation.

With respect to the sectors in question, particularly important are the following forthcoming specific tasks:

- Preparation, institutionalisation and training of MoEW regional bodies for the application of the river basin principle in water management;
- Staff and technical support for MoEW regional bodies responsible for protected areas and biological diversity conservation;
- Staff and technical support at central and regional level with regard to waste management and air quality management.

Detailed assessment of needs related to institutional strengthening is expected upon completion of an EC funded project, which started recently and has this specific objective.

4. Matching the requirements for environmental protection with the restructuring of the economy and the development of a market economy

- Solving environmental problems in parallel with the privatisation process. An environmental audit is carried out for all enterprises in the process of privatisation. The audit includes a financially viable programme for bringing the operation in compliance with environmental standards; a plan for monitoring done by the company and a remediation programme for past environmental damages. These documents are part of the privatisation contracts and provide realistic opportunity for taking into account the environmental requirements in the process of structural reforms.
- Integrating environment into sectoral policies. Two sector programmes for the development of the energy sector and the steel production have been adopted and the environmental action for solving the problems in these sectors have been laid out in them.
- Introducing environmental management systems and auditing systems in compliance with Regulation 1836/93/ EEC allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme (EMAS) by year 2000 and ISO 14 001 during 1998.
- Introducing Regulation 880/92/EC establishing a Community eco-label award scheme.

5. Public information and involvement in resolving environmental issues

- Transparency of activities is a guiding principle in the Government's policy laid in its Programme 2001. A number of specifically oriented

measures for involving the public and the non-governmental organisations as important partners in policy implementation are taken particularly in the environment sector where public sensitivity is high. The development of legislation on public information on environmental matters and a plan for its implementation are envisaged for the short term. A National Programme for Public involvement in solving environmental problems through education and environmental awareness raising in the respective area will also be prepared.

The Ministry of Environment and Water aims at expanding its partnership with NGOs and the public in the following main areas:

- Improving and broadening the possibilities for NGOs participation in the decision making process on environmental matters with respect to specific laws' requirements: environmental impact assessment (EIA) Procedures; process of preparation and approval of Protected Areas Management Plans, as well as in organising and carrying out supporting, regulatory and restoration activities within protected areas following measures envisaged in their management plans; development of municipal waste management plans; development, jointly with municipal bodies, of local programmes for reducing ambient air pollution, as well as participation in discussions on operational municipal action plans for emergency situations of increased concentrations of harmful substances in the ambient air.
- Involving NGOs in the development and discussions on draft legislative acts and programmes;
- Organisation of information campaigns and publication of appropriate printed materials;
- Information through the media on the Ministry's policy, on particular results from measures taken, on forthcoming activities, including regular press conferences with journalists and meetings with NGOs;
- Publication of a specialised information bulletin of the Ministry.

38. Maximum mobilisation and co-ordination of financial resources for environmental projects from national and external sources of funding.

The practical implementation of the current programme requires significant financial resources. Efforts to secure them are focused on:

- National Environmental Protection Fund, State budget and municipal budgets – mainly for infrastructure development ion the field of waste disposal and hazardous waste in some cases, as well as for waste water treatment;
- Financial resources form the European Union – ISPA and LSIF /for big infrastructure projects/, PHARE – National Programme and Crossborder Co-operation Programme, etc.;
- Attracting foreign investments for environmental projects in the energy sector by applying the "joint implementation" mechanism in accordance with provisions of the Framework Convention on Climate Change;
- Ensuring provision of funds from international financing institutions;

- Attracting funds within the framework of intergovernmental agreements in the field of environment, as well as international donors' programmes and organisations;
- Implementation of Debt for Environment Swap deals;
- Attracting private investors for improving the quality of municipal services in the field of municipal waste management and municipal sanitation, water supply, sewerage and waste water treatment by means of concessions. Attracting foreign investors by applying this scheme is extremely important for municipalities in view of rehabilitation of existing infrastructure and construction of new one.

Maximum effective utilisation of resources requires:

- Identification of priority projects for funding on the basis of clear criteria and sequence in time;
- Co-ordination of policies on national and local level and improving the exchange of information;
- Improvement in the quality of project proposals in order to submit to donors and lending institutions good competitive projects;
- Improvement of the capacity of municipalities for attracting private investments in public utilities services;
- Joint efforts of municipalities for solving problems of common concern.

7. Improving the control activities of the Ministry of Environment and Water, of other central institutions and their regional bodies, of municipalities with regard to compliance with environmental legislation.

Control is viewed in three aspects:

- Prevention control exercised through the EIA (Environmental Impact Assessment) procedures, adoption of protected areas management plans, river basin water management plans, etc. aimed at preventing pollution or environmental degradation as early as the planning and design stages of a project;
- Current control – permanent or periodic monitoring both of the state of environmental components and of potential sources of pollution and environmental degradation;
- Performance control – on compliance with permits, prescriptions, decisions on EIA, management plans measures, etc.

It is envisaged to improve control activities by:

- Improving the EIA process, inter alia improving the quality of EIA statements, making decisions on the statements, performance control on the implementation of decisions, development and implementation of strategic EIA;
- Development and practical implementation of working procedures regarding protected areas management plans and water bodies /form their development to the performance control, bearing in mind that their practical application is just starting;
- Completing the National Environmental Monitoring System with its subsequent inclusion in the European Monitoring Network;

- Gradually fitting emission control equipment in industries;
- Improving co-ordination between control bodies subordinated to different institutions;
- Establishing adequate control inspectorates in municipalities;
- Maximum utilisation of NGOs capacity to participate and facilitate control activities;
- Training of environmental inspectorates' staff for improving their skills and approaches related to levying fines and sanctions, as well as to new legislation requirements;
- Involving the public in carrying out environmental control, motivating the public to assist in the exercising control process;
- Improving co-operation with competent authorities from neighbouring countries in view of co-ordinating and joining efforts for monitoring and control in areas and facilities situated in boarder areas.

8. Development of the National Environmental Monitoring System

The starting position for planning the development of the National environmental Monitoring System has the following characteristics:

64. Relatively well functioning and with a broad territorial scope systems for:

    1.1. Ambient Air Quality Monitoring;
    1.2. Emission control;
    1.3. Surface water monitoring;
    1.4. Ground water monitoring;
    1.5. Pollution of soil with heavy metals and metalloids;
    1.6. National Automatic system for constant control of radioactive gamma background levels (RaMo). In addition to the National system for gamma background levels, radioactivity in the country is monitored in special networks of stations for surface, ground water, soil and vegetation.
    1.7. Monitoring of generated waste by type.

65. Systems with limited territorial scope:

2.1. Hydrobiological monitoring of water courses;
2.2. Microbiological monitoring of surface water;
2.3.Monitoring of organic pollutants of soil;
2.4. Monitoring of acidified soils.

Main areas for the development of the National Environmental Monitoring System:

66. Development of monitoring networks
    - The proposed development of monitoring networks is a general outline since an analytical review of the compliance of Bulgarian environmental legislation with the EU legislation is currently under way. This analysis will most probably complement the criteria for development of monitoring networks.
    - Air quality

- - Generally speaking, changes in the NEMS will refer to: optimisation of the number and location of monitoring stations; expanding ozone monitoring activities; introducing monitoring of particles which sizes are up to 10 m m and 2.5 m m.
- The hydrobiological monitoring network will cover the whole country with about 2000 stations by year 2000.
- Microbiological monitoring will be introduced in another six REWIs, having a key role for biological monitoring.
- Changes in the ground water monitoring network are expected in the near future on the basis of evaluation of current monitoring stations. Monitoring stations for mineral water in the country will also be included.
- Integrating the system for data transmission from the automatic air quality monitoring stations in the country into the National Automatic system for constant control of gamma radioactivity background levels, i.e. to expand the existing radio network by including stationary and mobile air quality monitoring stations into in.
- Waste
- Exploring, Studying and implementing methods for samples taking and analytical control of waste;
- Accreditation of laboratories for waste;
- Control and implementation of measures and activities planned and control on the quality of laboratory work.
    2. Expanding the monitoring system for biodiversity and protected areas.
- Developing the information system of the NEMS.

The improvement of the information system of the NEMS will include:

- Upgrading the technological basis of the system;
- Provision and development of communication links between different levels in the system, accuracy of information and protection against unauthorised access;
- Creation and development of data base containing information on the main environmental components;
- Developing and introducing software packages to maintain the data base, for statistical assessments, analysis and forecasts;
- Use of modern technologies on the basis of GIS for visualisation and analysis of environmental information;
- Development of the information basis of the environmental cadastre.

CONCLUSION

This Programme has been prepared in the process of developing the First draft of the National Development Plan concomitantly with the updating of the NPAA adopted in 1998. The document lays out the main challenges of the coming years. It is not believed to be completely comprehensive and is open for expansion of its scope, adjustment and detailed specification and as necessary updating objectives and measures for their achievement resulting from new data collection and analysis and further integration with other sectors' strategies and programmes, developed within the framework of the National Development Plan preparation.